



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Choong Paul Kim, et al.
Application No. : 10/735,148
Filed : December 12, 2003
Title : IN-SITU DUCTILE METAL/BULK GLASS MATRIX COMPOSITES
FORMED BY CHEMICAL PARTITIONING

Grp./Div. : 1742
Examiner : George P. Wyszomierski

Docket No. : 51667/RDS/C543

DECLARATION UNDER 37 C.F.R. 1.32

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Pasadena, CA 91109-7068
August 21, 2006

Commissioner:

I, William L. Johnson, declare and state as follows:

1. I am the same William L. Johnson who signed a Declaration filed in this application on November 11, 2005. I remain a qualified expert as described in that Declaration.

2. The technique described in the above-identified patent application produces a composite material having a ductile crystalline metal phase distributed in an amorphous metal matrix. This is obtained by cooling an alloy from the melt until a second phase forms in situ by homogeneous nucleation throughout the melt and followed by crystal growth. A composite having ductile metal particles precipitated in situ in an amorphous metal matrix exhibits ductility that is not present in a bulk metallic glass. Patterns of shear bands propagate through the amorphous metal matrix and through the ductile particles to produce overall ductility in the composite.

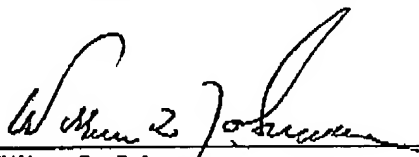
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Hall-Petch critical size limit for a brittle intermetallic compound would be substantially more than 20 nanometers, and that is not the only reason that the material is non-ductile. No appreciable dislocation slip occurs in such non-ductile materials.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.


William L. Johnson